THE CLAIMS

Listing of Claims:

1. (Previously Presented) A method for reproducing direct currents with the aid of a primary winding through which a primary current to be measured flows and which is magnetically coupled to a secondary winding via an iron core, comprising:

integrating a current signal supplied from the secondary winding; supplying the integrated current value to at least one of a measurement device and a trigger circuit of a switching device; and

adjusting the supplied integrated current value at predetermined time intervals by the primary current to be measured, the adjustment being determined with the assistance of a magnetic field sensor for measuring the magnetic field in the iron core using a compensation method including,

determining a current for setting a magnetic field in the iron core to zero, in a direction opposite to the primary current, in a compensation winding; and

correcting the integrated current value based upon the determined current.

2. (Previously Presented) The method as claimed in claim 1, wherein the secondary winding is used as the compensation winding.

3. (Previously Presented) The method as claimed in claim 1, wherein a linear-rising direct current is fed into the secondary winding in order to carry out the compensation method.

4. (Previously Presented) A direct current transformer having a primary winding through which a direct current to be measured flows and which is magnetically coupled to a secondary winding via an iron core, comprising:

a magnetic field sensor for measuring a magnetic field of the iron core;

an integration circuit, connected to the secondary winding and having an output connected to at least one of a measurement device and a trigger circuit of a switching device, for integrating a current signal supplied from the secondary winding and for supplying an integrated current value to at least one of the measurement device and the trigger circuit; and

a compensation circuit, connected to at least one of the secondary winding via a changeover switch and a separate compensation winding wound on the iron core, for compensating the magnetic field, the compensation circuit including

a controllable DC source; and

an evaluation circuit for processing a current value of the DC source when the magnetic field has been compensated, in order to adjust the

integrated current value of the integration circuit at predetermined time intervals.

5. (Previously Presented) The direct current transformer as claimed in claim 4, wherein the iron core includes an air gap wherein the magnetic field sensor is arranged in at least one of the air gap and a vicinity of the air gap.

6. (Previously Presented) The direct current transformer as claimed in claim 4, wherein the magnetic field sensor is a Hall probe.

7. (Previously Presented) The direct current transformer as claimed in claim 4, wherein the magnetic field sensor is a magnetoresistive sensor.

8. (Previously Presented) The direct current transformer as claimed in claim 4, wherein the magnetic field sensor is an indicator winding to which a balanced alternating current can be applied and whose voltage imbalance can be evaluated in the evaluation circuit in order to measure the magnetic field in the iron core.

9. (Previously Presented) The method of claim 1, wherein a linear-rising direct current is fed into a separate compensation winding in order to carry out the compensation method.

10. (Previously Presented) The direct current transformer as claimed in claim 5, wherein the magnetic field sensor is a Hall probe.

11. (Previously Presented) The direct current transformer as claimed in claim 5, wherein the magnetic field sensor is a magnetoresistive sensor.

12. (Previously Presented) The direct current transformer as claimed in claim 5, wherein the magnetic field sensor is an indicator winding to which a balanced alternating current can be applied and whose voltage imbalance can be evaluated in the evaluation circuit in order to measure the magnetic field in the iron core.